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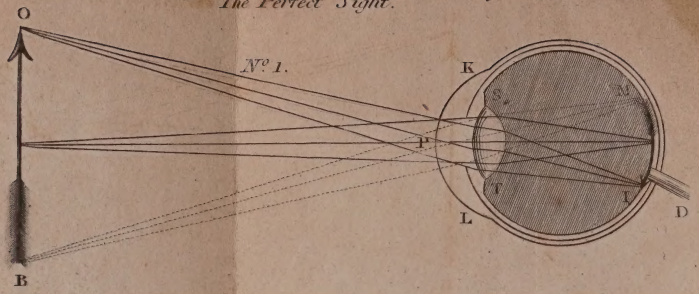

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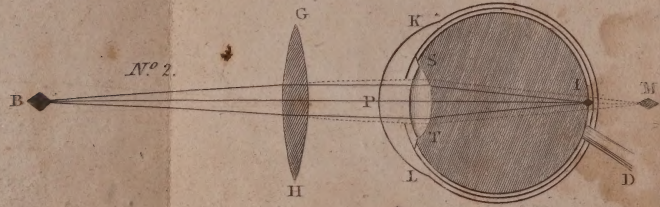

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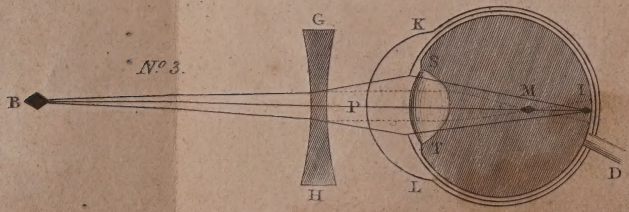

TO ALL WHO VALUE THEIR SIGHT.

A FAMILIAR TREATISE

ON

THE HUMAN EYE:

CONTAINING

PRACTICAL RULES

THAT WILL ENABLE ALL TO JUDGE WHAT

SPECTACLES

ARE BEST

Calculated to Preserve their Eyes

TO EXTREME OLD AGE.

BY FRANCIS WEST,

The Second Edition.

Illustrated with Three Correct

Diagrams of the Human Eye.

MAY BE HAD OF ALL BOOKSELLERS AND OPTICIANS.

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CONTENTS.

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PAGE.

Preface to the Public 5
Prefatory Observations..... 9
On the Different varieties of Imperfect Sight... 11
— Preserving the Sight, and bad Effects from Using Single Reading Glasses..... 13
— the First Application of Spectacles..... 16
Rules from which to judge when the Eyes require Optical Assistance..... 19
—— for Guarding the Eyes from Injury..... 22
On Endeavouring to do without Spectacles.... 24
Method of Placing Spectacles on the Head.... 25
Necessity of Applying to Regular Opticians.... 26
On Pebbles 29
— Spectacles with Coloured Glasses..... 31
— the Old, or, Long Sight..... 33
— the Myops, or Short Sight..... 35
— the Impropriety of Persons too frequently Changing the Focus of their Spectacle Glasses..... 37
Explanation of the Plate 39
On the Artificial Eye, constructed by F. West.. 43
A Catalogue of Instruments made by ditto..... 45

TO THE PUBLIC.

Every one has a laudable wish to know the best means of assisting, preserving, or improving that inestimable gift of Heaven, the Organ of Sight; and the Writer of the succeeding Pages, from long experience as an Optician, offers in a small compass, the best and plainest instructions for that purpose, to persons of all ages and conditions. Avoiding all display of unnecessary Science, he has striven to make his work as intelli-

gible as he trusts it will be found useful.

No one can err in the choice of Spectacles suitable to their necessity, that consult the explanations here briefly given and easily understood. Diagrams of the Human Eye, in its various Stages, are given in the Plates illustrative of the subject, and, also, an Artificial Eye has been constructed by the Writer, by which he is enabled to demonstrate the truth of his positions to the curious enquirer.

The Writer sincerely believes that a perusal of the contents of this little Work will benefit all, who, from Organic Infirmities, Neglect, or Ignorance, are com-

pelled to resort to artificial means for rendering their Sight subservient to all the Uses, Wants, and Delights, which Nature, through the Eye, conveys to the mind of Man, rendering him happy in himself and useful to his fellow creatures.

A

TREATISE

ON

THE HUMAN EYE,

AND

The Use of Spectacles.

PREFATORY OBSERVATIONS.

IT is the opinion of all writers on Optics, that there is no branch of Science of which so general a knowledge should be diffused as that which treats on the various imperfections of the Human Eye.—To relieve an organ which is the source of

the most refined pleasure,—to enable those who are in want of assistance to determine whether Spectacles will be advantageous or detrimental, and what kind will best suit their eyes; also to instruct those who already use Spectacles, how to discover whether those they have chosen are adapted to the state of their sight or calculated to increase its defects, is the intention of compiling the following pages and proposing briefly to explain what is meant by an Imperfect Sight, and in what manner it can be best relieved by the use of Spectacles.

ON THE DIFFERENT VARIETIES OF IMPERFECT SIGHT.

BY Imperfect Sight is meant an absolute or relative debility, without any opacity either in the Cornea or other internal parts of the Eye, and without any disease of the Retina or Optic Nerve; for the Sight is Imperfect when we cannot see objects distinctly in a common light, and at all the usual distances at which they are seen by an Eye in a perfect state.

An Imperfect Sight is occasioned by a confusion in the image formed upon the Retina. This happens whenever all the Rays that proceed from any one point of

an object are not concentrated again in one, but fall on different points of the Retina.

This CONFUSION takes place both in Long and Short-Sighted Eyes, in which it creates a most disagreeable sensation, and all attempts to dispel the illusion by bathing them with cold water, &c. &c. only renders the confusion still more inexplicable.

ON PRESERVING THE SIGHT,

AND

BAD EFFECTS FROM USING SINGLE READING GLASSES.

—oo◎oo—

ALTHOUGH it is impossible to prevent the decay of Sight, arising from age, partial disease, or illness, yet, by good management and prudence, its natural failure may be retarded. When persons first feel the necessity of optical assistance they generally apply to the Optician for a Reading or single Eye Glass, conceiving that Spectacles will make them appear older. This is perfectly absurd, sacrificing convenience to

vanity, and very injurious to the Sight:—at all times hastening the evils they are meant to conceal, for by habitually putting a Glass to the same Eye and leaving the other to wander, the Sight of the Idle Eye becomes of a different focus to the one that has been employed, and is often irreparably injured. It is obvious to every one that objects appear much brighter when seen with both Eyes than they do when viewed with one.—There are also many other objections to the use of Reading Glasses:—the Eyes are considerably strained by the motion which arises from the unsteadiness of the hand; and the motion of the Head and the Eye, in endeavouring to reconcile itself to each change, is kept in continual agitation. To these we may add the dazzling glare and irregular reflection from the surface of the Glass.

Those persons who for a time obsti-

nately determine in the use of Reading-Glasses are at last obliged to take to Spectacles of a much greater magnifying power than they otherwise would have done had they taken to a pair of Hand Spectacles which are much lighter, unique, and elegant in their appearance. — Many of them are made to fold up and appear like a single Eye Glass, when suspended by a ribbon round the neck.

ON THE FIRST APPLICATION OF SPECTACLES.

ALTHOUGH every precaution be attended to with scrupulous exactness, yet as we advance in years, the powers of our frame gradually decay, and the effect is generally first perceived in the organ of Vision.

Age, however, is not the absolute criterion by which we can determine upon the Sight, nor does it prove the necessity of wearing Spectacles,—for there are many whose sight remains good to an advanced age, while others have theirs impaired in youth by a variety of causes, such as exter-

nal injuries, or internal maladies, nor is the defect the same in different persons who are equal in age, or in the same person at different ages; in some the failure is natural, in others it is acquired by habit, but from whatever cause the decay arises, particular attention is requisite on the first application of Spectacles, otherwise the Eyes, (if not accurately suited) will be compelled to use efforts contrary to nature, becoming fatigued, and watery, and at last grow weak and inflamed.

It is too common a practice with persons who feel their Eyes beginning to fail, to take a pair of Spectacles belonging to a Father, Aunt, or some old friend of the family, to ascertain if they can see with them, and if, per chance, they see objects much larger than they really are, they take it for granted that they suit them beautifully, as they express it, and their old friend very kindly makes them a present of a pair of

Spectacles, which, from their great magnifying power, hasten their Eyes to premature age and debility. This practice cannot be too strongly reprehended* It is also very imprudent to try too great a variety of Spectacles at the Opticians, as, by each change, the pupil of the Eye becomes agitated and fatigued, and, after getting home, you find the Spectacles you have fixed on give pain to the Eyes.

---

* The price of a pair of Glasses of the very best description is only 1s. 6d.

RULES FROM WHICH TO JUDGE WHEN THE SIGHT REQUIRES OPTICAL ASSISTANCE.

THE following Rules will enable every one to judge for themselves when the Sight may be assisted and preserved by the use of Spectacles :

I.—When we are obliged to remove small objects to a considerable distance from the Eye in order to see them distinctly.

II.—If we find it necessary to use more Light than formerly : as, for instance, to

place a candle between the Eyes and the Object.

III.—If on looking at and attentively considering a near object, it becomes confused, and appears to have a kind of mist swimming before it.

IV.—When the letters of a book seem to run one into the other and hence appear double and treble.

V.—If the Eyes are so fatigued by a little exercise that we are obliged to shut them from time to time and relieve them by looking at other objects.

When all these circumstances occur together or any of them separately, it will be necessary to seek assistance from Spectacles, which, if judiciously adapted to the true state of the Eyes, will ease them, and, in some degree, check their tendency to grow

flatter, whereas, if they be not assisted in time, the flatness will increase considerably, and the Eyes be weakened by the efforts they are compelled to exert.

RULES FOR GUARDING THE EYES FROM INJURY.

—oo◈oo—

THE following are a few Rules which should be attended to for the preservation of the Sight:

I.—Never to sit exposed to a strong blaze of Gas-Light, nor in absolute Gloom, as any strong contrast tends to weaken the Sight.

II.—Always avoid reading very small printed books, &c.

III.—Never Read if the Eyes are Weak or

Inflamed, by Candle-Light, or fatigue them over fine Needle-work.

IV.—The Eye should not be allowed to dwell on Glaring Objects on first Waking in the Morning. The Sun should not be suffered to shine into the Room, but a moderate quantity of Light only admited.

V.—The Long-Sighted should use themselves to read with rather less light, and somewhat nearer the Eye than what they naturally like, while those that are Short-Sighted should use themselves to read with the book as far off as possible; for as the Eye is an Organ which will soon reconcile itself to habit, both descriptions of Sight would be naturally improved, while a contrary course will increase their natural imperfection.

ENDEAVOURING TO DO WITHOUT SPECTACLES.

—oo◎oo—

MANY Persons imagine the longer they can do without the use of Spectacles, the more they preserve the Sight: this is perfectly falacious, for when the Eye sensibly flattens and we do not see as distinct as formerly, all delay is dangerous, and the longer those who feel the want of assistance defer the use of Spectacles, the more they will increase the failure of the Sight.

There are too many who procrastinate the use of them nntil they are at last compelled to use Glasses of nine or ten inches focus instead of thirty-six or forty.

METHOD OF PLACING SPECTACLES ON THE HEAD.

ATTENTION is also necessary to the placing of Spectacles on the head. The Glasses should come as close to the Eyes as possible, without touching the Eye-Lash; and the sides of the frame should be placed on the head about mid-way between the top of it and the ear, so that the Glasses are parallel with the object viewed. Otherwise placed, they reflect a distorted image on the Retina.

NECESSITY OF APPLYING TO REGULAR OPTICIANS.

THE preceding observations will shew how important it is to attend to the first symptoms of imperfection in the sight, and the necessity of being particularly cautious that the Glasses applied are those recommended, by a practical Optician, as innumerable instances of a serious nature have happened to the Eyes from persons imprudently purchasing Spectacles of Hawkers and at Sale Shops, such persons being altogether

unacquainted with the science of Optics, or the nature of Vision, and, as the Eye will endeavour to conform itself to any improper focus, it is harrassed out and brought into extreme age, at a much earlier period than would have happened had it been suited with judgment at first. Let it always be remembered that Spectacles are intended to reinstate the Eye as much as possible in its original and natural focus, and not to make objects appear as large again as they really are. Magnifying power is not the point that is most to be considered in the choice of Spectacles, but their conformity to the Sight enabling us to view with ease objects as near their natural size as possible. As Spectacles are intended to remedy the defects of Sight, it is, also, most important that the Lenses are of the most perfect spherical truth, and it may be deemed an unspeakable happiness that in fine Glass and Pebbles we

have a substance so analogous to the humours of the Eye, that it renovates the Sight of thousands who would otherwise be labouring under the effects of partial blindness.

ON PEBBLES.

—oo◉oo—

THE particular property of Pebbles are that their substance is much harder than Glass, and, consequently, takes a higher polish, and transmits more light. They are also cooling to the Eyes, and not liable to scratch; but, as they are subject to many imperfections, such as veins, flaws, &c. they should be carefully inspected and none but the best used for Spectacles. Therefore, if you considerately value that inestimable treasure, the Sight, always apply to an Experienced Optician, and he will take care to

recommmend those that are in conformity with the true state of your Eyes and of the best quality.

ON SPECTACLES WITH COLOURED GLASSES

—oo◇oo—

Spectacles with green Glasses may be generally considered injurious to the Sight, particularly those of a dark colour, for although it is an agreeable colour to look at, it is a bad one to look through. All objects when viewed through green glass appear of a muddy yellow, tinged with gloomy green. It may also be observed that all deep coloured Glasses increase the labour of the Eyes, and bring them into so weak a state as to unfit them for all the ordinary purposes of life. If persons feel distressed from the light, let them shade the windows

of their apartments, and have the bed furniture of a green colour. I would recommend them, also, to use a pair of light blue Glasses for walking with, or reading by candle-light. Those of a half number will be generally found most agreeable to the Eyes.

THE OLD, OR, LONG SIGHT.

BY Long-Sighted Persons distant objects are seen distinctly, near ones confused; and, in proportion as the defect increases, the nearer objects become more indistinct, until it is found impossible to read common sized print without the aid of Glasses. This is occasioned by the objects not meeting on the Retina but beyond it. (See Diagram, No. 2.) A defect which is remedied by Convex Glasses, and particular care should be taken that the Glasses are of the most perfect description:—not magnifying too much, but rendering objects distinct and the same size as they really are at about fourteen inches from the Eye.

It may be observed that mariners and farmers men are generally Long-Sighted, This may be attributed to their being accustomed to look at distant objects. There are instances of mariners being able to descry a speck on the horizon many miles distant, who, nevertheless, cannot read a common sized print without Spectacles. Thus it is plain that the habit of gazing on objects very close or very far off, are extremes that injure the Sight for its general uses, and should be avoided as much as possible.

THE MYOPS, OR, SHORT SIGHT.

THE Short-Sighted see distant objects confusedly and those that are near at hand distinctly. Their Sight is, therefore, defective with respect to distant objects, and is only to be assisted through Concave Glasses. By their assistance, those whose sphere of distinct Vision scarcely extends beyond two or three feet, are enabled to distinguish objects at a considerable distance. The concave Lens produce distinct Vision by causing the Rays to diverge more and unite at the Retina, instead of meeting before they reach the bottom of the Eye. (See Diagram, No. 3.) —Near-Sightedness generally comes on at

an early age, and is more common in the higher than the lower ranks of life. The habit of looking often and intently at near objects generally increases the defect.

In the choice of Glasses no rule can be laid down for the Short Sight: it is a defect which has no connection with age, or stated progression that can guide the Optician or lead him to recommend one Glass in preference to another. The whole must depend on the observation of the Short Sighted themselves, who, by trying Glasses of different degrees of concavity, will soon find out those that are most advantageous in producing distinct Vision at different distances; always taking care to choose those that diminish the least.

ON THE IMPROPRIETY OF PERSONS

TOO FREQUENTLY

CHANGING THE FOCUS

OF THEIR SPECTACLE GLASSES.

IT is a frequent habit with many persons after they are well suited with Spectacles, to indulge themselves with a higher number than there is absolute occasion for. Thus after using for two or three months, Glasses of No. 1 or 2, they increase them to No. 4 or 5. By these frequent changes, persons often use deep Glasses where shallow ones would answer the purpose: — this impropriety applies to Long as well as Short.

sighted persons, for it may be said by Spectacles as by Medicine, you may keep increasing the dose until it loses its effect.—Not that I would be understood to recommend persons not to exchange their Glasses for those of greater power occasionally, but merely give them a hint not to change until it is absolutely necessary. Some few economical folks think they cannot have the Glasses of their Spectacles of too great a magnifying power, and that the more they magnify, the longer they will last, but they are totally unacquainted with the structure of the Eye. The Pupil contracts and dilates according to the Focus of the Glass placed before it, and after it has become accustomed to the great magnifier it is no more or longer assisted by it than one of a less convexity.

EXPLANATION OF THE PLATE.

Having explained the cause and pointed out the Remedies for an Imperfect Sight, I bring before the Readers three Diagrams, in order that they may the better comprehend the formation of the Eye, and the manner the Object is reflected on the Retina to produce distinct Vision.

THE PERFECT SIGHT, *No.* 1.

In the first Diagram No. 1, it will be observed that there is a proper degree of convexity in the Cornea (K. P. L.) and Crys-

talline (S. T.) for conveying parallel Rays to a Focus on the bottom of the Eye in a sound state: hence every distant object (O. B.) will have its image (I.M.) accurately depicted on the Retina, and, by that means, produce distinct Vision. From the hinder part of the Eye proceeds the Optic Nerve (D.) which conveys to the Brain the sensations produced on the Retina.

THE OLD, or, LONG SIGHT, *No.* 2.

ON the other hand, when the Cornea (K.P.L.) or Crystalline (S. T.) is too flat, which generally happens from age, (see Diagram, No. 2.) an object (B.) placed at the same distance from the Eye as before, will have the rays after refraction in the Eye, proceed to a Focus beyond the Retina, and form an image at M. To remedy this defect a convex Lens (G. H) is applied to the

Eye, which causes the Rays to converge more, by which means the focal distance s shortened, and the image is then formed on the Retina at I, by which distinct Vision is produced.

THE MYOPS, or, SHORT SIGHT, *No* 3.

BUT if the Cornea (K. P. L.) or Crystalline (S. T.) or both should chance to be a little more convex than necessary, (as in Diagram, No. 3,) it will cause the Rays to unite in a Focus before they arrive at the Retina. In the bottom of the Eye, the Image (M.) of the Object (B.) will be formed in the body of the vitreous humour, and will, therefore, be very confused and indistinct on the Retina at I. A person having such an Eye is called a Myops, in allusion

to the Eye of a Mouse, by reason of its great convexity. To remedy this defect, a concave Lens (G. H.) is applied, which, if a proper degree of concavity will cause the Rays to diverge, and the Object (B.) is made to fall very perfect on the Retina at I, and distinct Vision will be effected, in the same manner as in an Eye of a just conformation, by painting the Image on the Retina.

THE ARTIFICIAL EYE.

FOR the purpose of explaining in the most satisfactory manner the optical effect of Vision, the writer has constructed an Artificial eye, twenty-one inches in circumference, by which the various imperfections of Sight and the practical mode of relieving it is

pleasingly and familiarly explained, and from the experience and general knowledge he has had of the structure of the Human Eye, he takes upon himself to relieve every description of weak and impaired Sight that is within the reach of Optical assistance.

Persons who reside at a distance from London, may be suited with Spectacles, by writing if ever, and how long, they have used Glasses, and at what distance they hold the Object for distinct Sight, or the old Glass they have been accustomed to wear and also state in what particulars it fails to be useful for the purposes intended.

*** THOSE PERSONS WHOSE EYES HAVE BEEN COUCHED SUITED WITH PECULIAR CARE AND ATTENTION.

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ERRATA.

Page 22, line 8, for A ways read Always.
—— 23, — 3, for admited read admitted.
—— 24, — 4, for falacious read fallacious.
—— 41, — 2, for s read is.

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